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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,403	08/28/2001	Mark Kintis	12-1212	6140
30050	7590	11/23/2004	EXAMINER FILE, ERIN M	
PATENT COUNSEL, TRW INC. S & E LAW DEPT. ONE SPACE PARK, BLDG. E2/6051 REDONDO BEACH, CA 90278			ART UNIT 2634	PAPER NUMBER

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/941,403

**Applicant(s)**

KINTIS, MARK

**Examiner**

Erin M. File

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/28/01</u> | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11-15, 17, 18, 20, 21, 23 are rejected under 35 U.S.C. 102(b) as being unpatentable over Laverghetta.

**Claim 11**, Laverghetta discloses a mixer topology (fig 4.18) comprising:

- Two balanced mixers each with two input ports and one output port, electrically coupled
- Means for phase shifting pre-selected output signals in the output coupler (90-degree Quad Hybrid)

**Claim 12**, inherits the limitations of claim 11. Laverghetta further discloses three coupling devices (fig 4.18). These couplers include:

- Zero Degree Divider Coupler
- A Quad Hybrid Input Coupler
- An Output Coupler providing two outputs, a zero degree phase shift of the output and a 90-degree phase shift of the output.

**Claim 13**, inherits the limitations of Claim 12. Additionally Laverghetta discloses said balanced mixers providing two IF (Intermediate Frequency) inputs to his output coupler.

**Claim 14**, inherits the limitations of Claim 13. Further Laverghetta discloses in his Intermediate Frequency (IF) Output Coupler (fig 4.18) a zero degree phase shift between the first input and the output.

**Claim 15**, inherits the limitations of Claim 14. Further Laverghetta discloses in his Intermediate Frequency (IF) Output Coupler (fig4.18) a zero degree phase shift between the second input and the output.

**Claim 17**, inherits the limitations of Claim 12. Further Laverghetta discloses his Quad Hybrid Input Coupler (fig 4.18) with one input port and two output ports. The first output providing the input to a first mixer electrically coupled through the zero degree divider to the second output providing input to a second mixer.

**Claim 18**, inherits the limitations of Claim 17. Laverghetta also discloses his input coupler (fig 4.18) is a quadrature hybrid, so that the phase shift between the input and the second output port is zero-degrees.

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**Claim 20**, inherits the limitations of Claim 18. Further Laverghetta discloses Quadrature Hybrid input coupler (fig 4.18) has a 180-degree phase shift between the input and the first output accomplished by using the natural 90-degree phase shift from the Quadrature Hybrid and using an additional external 90-degree phase shift (p 90).

**Claim 21**, inherits the limitations of Claim 12. Laverghetta discloses a Zero Degree Divider Coupler (fig 4.18) with one local oscillator input and two zero-degree phase shift outputs, the first output input to the first mixer and the second output input to the second mixer.

**Claim 23**, inherits the limitations of Claim 22. Laverghetta discloses a Zero Degree Divider Coupler (fig 4.18) with one local oscillator input and two zero-degree phase shift outputs, the first output input to the first mixer and the second output input to the second mixer.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

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said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 16 and 19 are rejected under U.S.C. 103(a) as being unpatentable over Laverghetta.

**Claim 16**, inherits the limitations of claim 14. Although in the given configuration Laverghetta does not disclose an Intermediate Frequency coupler configured with a phase shift of 180 degrees between one of the input ports and the output port, but instead a 90 degree phase shift between the input and the output. However, in his apparatus Laverghetta teaches an input coupler that uses an exterior 90-degree phase shift in combination with the quadrature phase shift in the input coupler to create a 180-degree phase shift in total (p 90). Such a phase shifting device could be used again at the input to the IF coupler to provide the 180 degree phase shift. The 90-degree phase shift of one input to the IF coupler is necessary for all possible combinations of input and oscillator frequencies to be output from the IF and would be obvious to one skilled in the art at the time of invention.

**Claim 19**, inherits the limitations of claim 18. Laverghetta does not disclose an input coupler with both first and second output of zero degree phase shift. However Laverghetta discloses in his apparatus a zero degree divider with two outputs with zero degree phase shift (fig 4.18). The zero degree divider at the RF input is necessary for all possible combinations of input and oscillator

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frequencies to be output from the IF and would be obvious to one skilled in the art at the time of invention to use this type zero degree phase shift coupler in place of the 180-degree coupler in Leverghetta's apparatus.

***Claim Rejections - 35 USC § 112***

5. Claims 1-10, 22, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1**, is rejected as being vague and indefinite.

The recitation "...wherein said input coupler, LO coupler and IF coupler are configured to cancel the and one or more other preselected spurs other than the (1, 1) spur" is not understood.

**Claims 2-10**, are also rejected as being indefinite as they are dependent on the indefinite rejected Claim.

**Claim 22**, recites the limitation "said LO coupler" in Claim 12. There is insufficient antecedent basis for this limitation in the claim.

**Claim 24**, recites the limitation " between the other of the two input ports and the output port of 180 degrees" in the Local Oscillator. The Local Oscillator


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disclosed in Claim 21 specifies only one input port. There is insufficient antecedent basis for this limitation in the claim.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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